# Assignment Problem Using QM

In this example, we will solve an assignment problem using linear programming with Excel QM.

The hospital administrator at St. Charles General Hospital must appoint head nurses to four newly established departments: urology, cardiology, orthopedic, and obstetrics. In anticipation of this staffing problem, she has hired four nurses: Hawkins, Condriac, Bardot, and Hoolihan. Each nurse has been ranked on a cost scale of 0 to 100 for each department; a 0 implies that she would be perfectly suited for the task; a 100 implies that the nurse is not at all suited to head the unit. The table below represents all possible assignments and nurse ratings. Which nurse should be assigned to which unit?

Nurse	Urology	Cardiology	Orthopedics	Obstetrics
Hawkins	28	18	15	75
Condriac	32	48	23	38
Bardot	51	36	24	36
Hoolihan	25	38	55	12

To figure this out, let's open Excel QM and solve our problem. Click on the **Excel QM** tab → **Alphabetical** → **Assignment**.
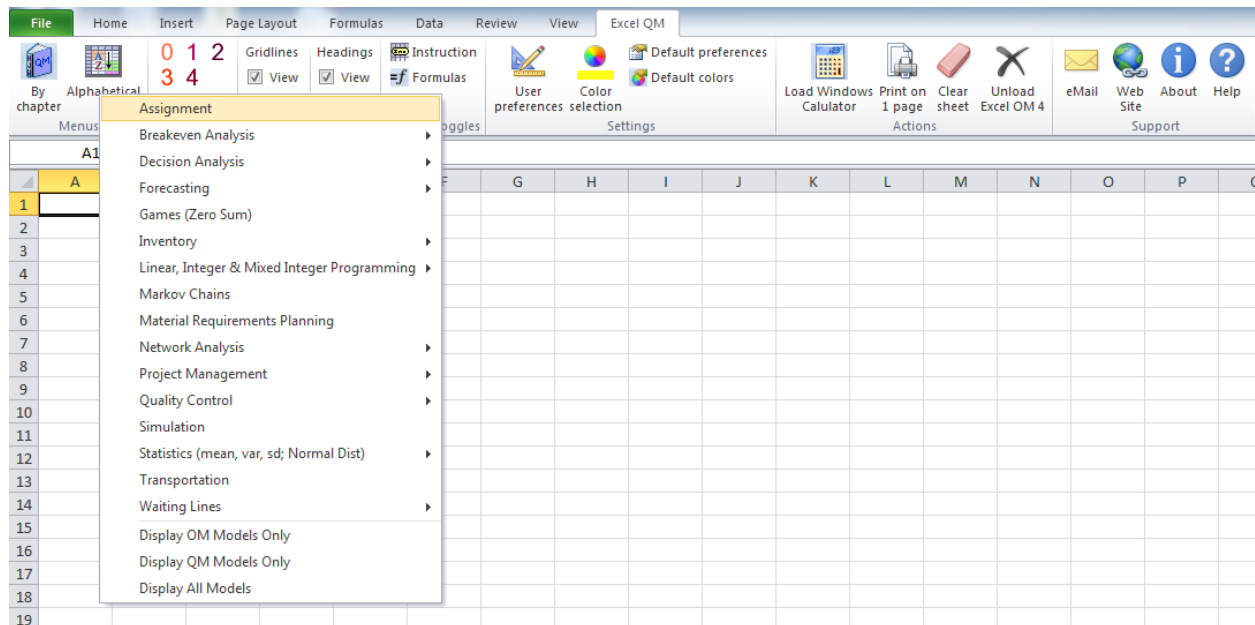
In the Spreadsheet Initialization window, be sure to identify that we have four assignments and we want to minimize (recall that a value closer to zero is ideal).

Spreadsheet Initialization

Title: _____   Sheet name: _____

Enter the number of assignments   4

Name for rows   Job

(Use A for A, B, C ... or a for a, b, c ...)

Name for columns   Machine

Objective
○ Maximize
● Minimize

Use Default Settings

Help   Cancel   OK

Click **OK**. A spreadsheet will display.

	A	B	C	D	E	F	G	H
1	**Assignment**							
2								
3		Enter the assignment costs in the shaded area. Then go to the DATA Tab on the ribbon, click on Solver in the Data Analysis Group and then click SOLVE.						
4								
5		If SOLVER is not on the Data Tab then please see the Help file						
6	**Data**							
7	COSTS	Machine 1	Machine 2	Machine 3	Machine 4			
8	Job 1							
9	Job 2							
10	Job 3							
11	Job 4							
12								
13	**Assignments**							
14	**Shipments**	Machine 1	Machine 2	Machine 3	Machine 4	Row Total		
15	**Job 1**					0		
16	**Job 2**					0		
17	**Job 3**					0		
18	**Job 4**					0		
19	**Column Total**	0	0	0	0	0		
20								
21	**Total Cost**	0						
22								

Enter the data shown into the table.

	A	B	C	D	E	F	G	H
1	**Assignment**							
2		Enter the assignment costs in the shaded area. Then go to the DATA						
3		Tab on the ribbon, click on Solver in the Data Analysis Group and then						
4		click SOLVE.						
5		If SOLVER is not on the Data Tab then please see the Help file						
6	**Data**							
7	COSTS	Uro	Cardio	Ortho	OB			
8	Hawkins	28	18	15	75			
9	Condriac	32	48	23	38			
10	Bardot	51	36	24	36			
11	Hoolihan	25	38	55	12			
12								
13	**Assignments**							
14	**Shipments**	**Uro**	**Cardio**	**Ortho**	**OB**	**Row Total**		
15	**Hawkins**					0		
16	**Condriac**					0		
17	**Bardot**					0		
18	**Hoolihan**					0		
19	**Column Total**	0	0	0	0	0		
20								
21	**Total Cost**	0						
22								

That is it. Once you have the data entered correctly, click the **Data** tab and then **Solver**.
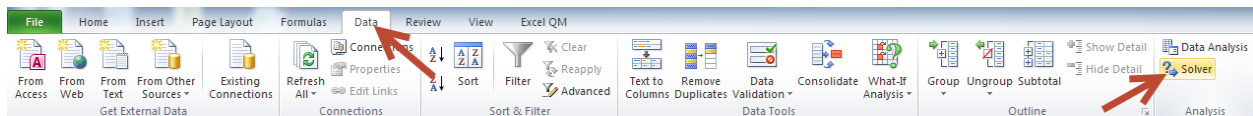
A Solver Parameters window will appear.
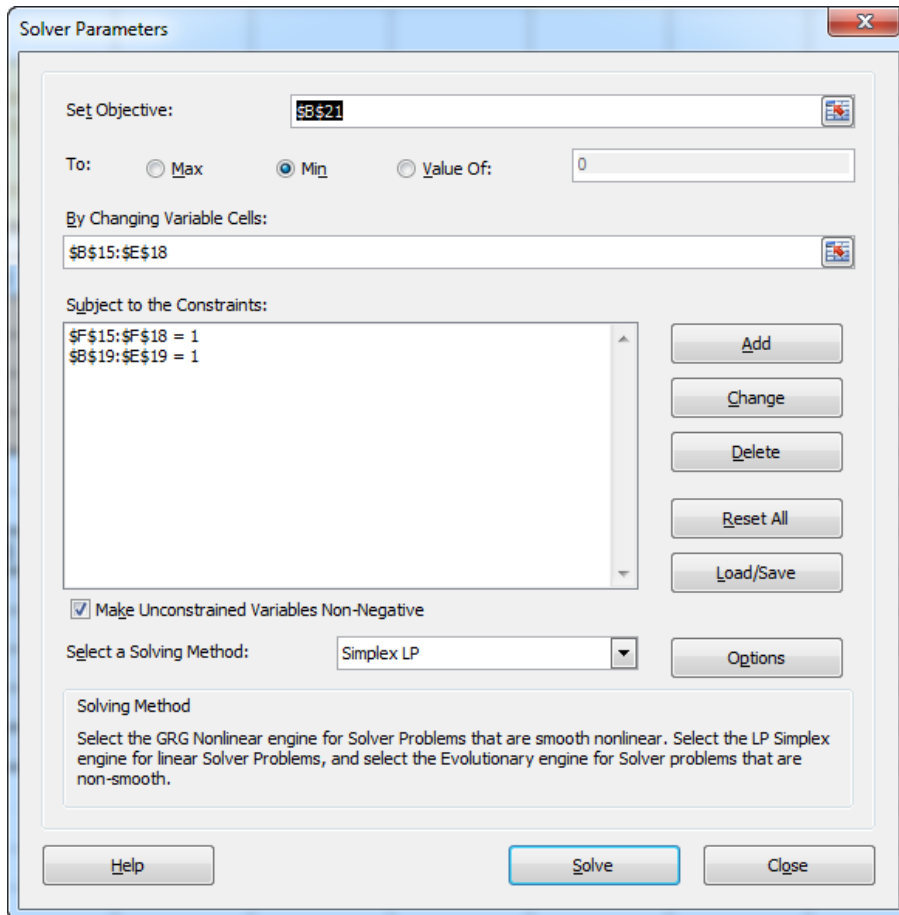
Click **Solve** and then **OK** in the **Solver Results** window. Our results are shown below.

Data					
COSTS	Uro	Cardio	Ortho	OB	
Hawkins	28	18	15	75	
Condriac	32	48	23	38	
Bardot	51	36	24	36	
Hoolihan	25	38	55	12	

Assignments					
Shipments	Uro	Cardio	Ortho	OB	Row Total
Hawkins		1			1
Condriac	1				1
Bardot			1		1
Hoolihan				1	1
Column Total	1	1	1	1	4

Total Cost	86

Assignment	Rating
Hawkins to cardiology	18
Condriac to urology	32
Bardot to orthopedics	24
Hoolihan to obstetrics	12
Total "cost scale" 86	

[Click here](#) to download the completed spreadsheet table so you can compare it to yours.

This concludes our tutorial on assignment problem using linear programming with Excel QM.